SAFETY DATA SHEET
ROHM AND HAAS ELECTRONIC MATERIALS LLC

Product name: MEGAPOSIT™ SPR™ 220-7.0 POSITIVE PHOTORESIST
Issue Date: 07/14/2017
Print Date: 07/19/2017

ROHM AND HAAS ELECTRONIC MATERIALS LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: MEGAPOSIT™ SPR™ 220-7.0 POSITIVE PHOTORESIST

Recommended use of the chemical and restrictions on use
Identified uses: For industrial use: use in the manufacturing of semiconductor devices
Uses advised against: We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

COMPANY IDENTIFICATION
ROHM AND HAAS ELECTRONIC MATERIALS LLC
A Subsidiary of The Dow Chemical Company
455 FOREST STREET
MARLBOROUGH MA 01752
UNITED STATES

Customer Information Number: 215-592-3000
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 1 800 424 9300
Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 3
Eye irritation - Category 2A
Carcinogenicity - Category 2
Specific target organ toxicity - single exposure - Category 3

Label elements
Hazard pictograms
Signal word: **WARNING!**

**Hazards**
Flammable liquid and vapour.
Causes serious eye irritation.
May cause respiratory irritation.
Suspected of causing cancer.

**Precautionary statements**

**Prevention**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.

**Response**
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

**Storage**
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

**Disposal**
Dispose of contents/container to an approved waste disposal plant.

**Other hazards**
No data available
3. COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical nature:** Solution of organic compounds
This product is a mixture.

<table>
<thead>
<tr>
<th>Component</th>
<th>CASRN</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cresol novolak resin</td>
<td>97-64-3</td>
<td>25.0 - 35.0 %</td>
</tr>
<tr>
<td>Ethyl lactate</td>
<td>97-64-3</td>
<td>25.0 - 35.0 %</td>
</tr>
<tr>
<td>Anisole</td>
<td>100-66-3</td>
<td>10.0 - 20.0 %</td>
</tr>
<tr>
<td>Diazo Photoactive Compound</td>
<td>Trade secret</td>
<td>1.0 - 10.0 %</td>
</tr>
<tr>
<td>2-Methyl Butyl Acetate</td>
<td>624-41-9</td>
<td>1.0 - 10.0 %</td>
</tr>
<tr>
<td>n-amyl acetate</td>
<td>628-63-7</td>
<td>1.0 - 10.0 %</td>
</tr>
<tr>
<td>Cresol</td>
<td>1319-77-3</td>
<td>&lt; 1.0 %</td>
</tr>
<tr>
<td>Organic Siloxane Surfactant</td>
<td>Trade secret</td>
<td>&lt; 1.0 %</td>
</tr>
<tr>
<td>1,4-Dioxane</td>
<td>123-91-1</td>
<td>&lt; 0.2 %</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

**Description of first aid measures**

**General advice:** If potential for exposure exists refer to Section 8 for specific personal protective equipment. First Aid responders should pay attention to self-protection and use the recommended protective clothing.

**Inhalation:** Remove from exposure. If there is difficulty in breathing, give oxygen. Seek medical attention if symptoms persist.

**Skin contact:** Wash skin with water. Continue washing for at least 15 minutes. Obtain medical attention if blistering occurs or redness persists.

**Eye contact:** Immediately flush the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

**Ingestion:** Wash out mouth with water. Have victim drink 1-3 glasses of water to dilute stomach contents. Induce vomiting if person is conscious. Immediate medical attention is required. Never administer anything by mouth if a victim is losing consciousness, is unconscious or is convulsing.

**Most important symptoms and effects, both acute and delayed:** Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and
special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

**Notes to physician:** Treat symptomatically.

### 5. FIREFIGHTING MEASURES

**Suitable extinguishing media:** Dry sand  Dry chemical  Alcohol-resistant foam  Carbon dioxide (CO2)  Keep containers and surroundings cool with water spray.

**Unsuitable extinguishing media:** Straight or direct water streams may not be effective to extinguish fire.

**Special hazards arising from the substance or mixture**
**Hazardous combustion products:** No data available

**Unusual Fire and Explosion Hazards:** This product may give rise to hazardous vapors in a fire. Vapors can travel a considerable distance to a source of ignition and result in flashback.

**Advice for firefighters**
**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry.

**Special protective equipment for firefighters:** Wear full protective clothing and self-contained breathing apparatus.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures:** Wear suitable protective clothing. Wear respiratory protection. Eliminate all ignition sources.

**Environmental precautions:** Prevent the material from entering drains or water courses. Do not discharge directly to a water source. Advise Authorities if spillage has entered watercourse or sewer or has contaminated soil or vegetation.

**Methods and materials for containment and cleaning up:** Contain spills immediately with inert materials (e.g., sand, earth). Transfer into suitable containers for recovery or disposal. Finally flush area with plenty of water.

### 7. HANDLING AND STORAGE

**Precautions for safe handling:** Use local exhaust ventilation. Avoid contact with eyes, skin and clothing. Keep container tightly closed.

**Conditions for safe storage:** Store in original container. Keep away from heat and sources of ignition. Storage area should be: cool  dry  well ventilated  out of direct sunlight  Keep away from heat, sparks, flame, and other sources of ignition. Practice good personal hygiene to prevent accidental exposure.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulation</th>
<th>Type of listing</th>
<th>Value/Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl lactate</td>
<td>Dow IHG</td>
<td>TWA</td>
<td>5 ppm</td>
</tr>
<tr>
<td>Anisole</td>
<td>Dow IHG</td>
<td>TWA</td>
<td>5 ppm</td>
</tr>
<tr>
<td></td>
<td>Dow IHG</td>
<td>STEL</td>
<td>10 ppm</td>
</tr>
<tr>
<td>2-Methyl Butyl Acetate</td>
<td>Dow IHG</td>
<td>TWA</td>
<td>50 ppm</td>
</tr>
<tr>
<td></td>
<td>Dow IHG</td>
<td>STEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>TWA</td>
<td>50 ppm</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>STEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td>CAL PEL</td>
<td>STEL</td>
<td>532 mg/m^3</td>
</tr>
<tr>
<td></td>
<td>CAL PEL</td>
<td>PEL</td>
<td>266 mg/m^3</td>
</tr>
<tr>
<td>n-amyl acetate</td>
<td>Dow IHG</td>
<td>TWA</td>
<td>50 ppm</td>
</tr>
<tr>
<td></td>
<td>Dow IHG</td>
<td>STEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>525 mg/m^3</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>TWA</td>
<td>50 ppm</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>STEL</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td>CAL PEL</td>
<td>STEL</td>
<td>532 mg/m^3</td>
</tr>
<tr>
<td></td>
<td>CAL PEL</td>
<td>PEL</td>
<td>266 mg/m^3</td>
</tr>
<tr>
<td>Cresol</td>
<td>ACGIH</td>
<td>TWA Inhalable</td>
<td>20 mg/m^3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>fraction and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>vapor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>22 mg/m^3</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>5 ppm</td>
</tr>
<tr>
<td>1,4-Dioxane</td>
<td>Dow IHG</td>
<td>TWA</td>
<td>5 ppm</td>
</tr>
<tr>
<td></td>
<td>Dow IHG</td>
<td>TWA</td>
<td>SKIN</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>TWA</td>
<td>20 ppm</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>TWA</td>
<td>SKIN</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>360 mg/m^3</td>
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<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SKIN</td>
</tr>
</tbody>
</table>

Exposure controls
Engineering controls: Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (local exhaust), and control of process conditions.

Individual protection measures
Eye/face protection: Goggles
Skin protection
Hand protection: Butyl rubber gloves. Other chemical resistant gloves may be recommended by your safety professional.
Other protection: Normal work wear.
Respiratory protection: Respiratory protection if there is a risk of exposure to high vapor concentrations. The specific respirator selected must be based on the airborne concentration found in the workplace and must not exceed the working limits of the respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Physical state: liquid
Product name: MEGAPOSIT™ SPR™ 220-7.0 POSITIVE PHOTORESIST

10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use. Product will not undergo hazardous polymerization.

Conditions to avoid: High temperatures  Static discharge

Incompatible materials: Oxidizing agents  Bases  Acids

Hazardous decomposition products: Carbon monoxide  carbon dioxide  phenols  oxides of sulfur  Nitrogen oxides (NOx)

NOTE: The physical data presented above are typical values and should not be construed as a specification.
11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Product test data not available. Refer to component data.

Acute dermal toxicity
Product test data not available. Refer to component data.

Acute inhalation toxicity
Product test data not available. Refer to component data.

Skin corrosion/irritation
Product test data not available. Refer to component data.

Serious eye damage/eye irritation
Product test data not available. Refer to component data.

Sensitization
Product test data not available. Refer to component data.

Specific Target Organ Systemic Toxicity (Single Exposure)
Product test data not available. Refer to component data.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
Product test data not available. Refer to component data.

Carcinogenicity
Product test data not available. Refer to component data.

Teratogenicity
Product test data not available. Refer to component data.

Reproductive toxicity
Product test data not available. Refer to component data.

Mutagenicity
Product test data not available. Refer to component data.

Aspiration Hazard
Product test data not available. Refer to component data.

COMPONENTS INFLUENCING TOXICOLOGY:

Cresol novolak resin
Acute oral toxicity
Single dose oral LD50 has not been determined.

**Acute dermal toxicity**
The dermal LD50 has not been determined.

**Acute inhalation toxicity**
The LC50 has not been determined.

**Skin corrosion/irritation**
No relevant data found.

**Serious eye damage/eye irritation**
No relevant data found.

**Sensitization**
For skin sensitization:
No relevant data found.

For respiratory sensitization:
No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**
Available data are inadequate to determine single exposure specific target organ toxicity.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**
No relevant data found.

**Carcinogenicity**
No relevant data found.

**Teratogenicity**
No relevant data found.

**Reproductive toxicity**
No relevant data found.

**Mutagenicity**
No relevant data found.

**Aspiration Hazard**
Based on physical properties, not likely to be an aspiration hazard.

**Ethyl lactate**

**Acute oral toxicity**
LD50, Rat, > 2,000 mg/kg  OECD Test Guideline 425 No deaths occurred at this concentration.

**Acute dermal toxicity**
LD50, Rat, > 5,000 mg/kg

**Acute inhalation toxicity**
LC50, Rat, 4 Hour, vapour, 5.4 mg/l No deaths occurred at this concentration.
Skin corrosion/irritation
Essentially nonirritating to skin.

Serious eye damage/eye irritation
May cause severe eye irritation.
May cause moderate corneal injury.
Effects may be slow to heal.

Sensitization
For skin sensitization:
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause respiratory irritation.
Route of Exposure: Inhalation
Target Organs: Respiratory system

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In animals, effects have been reported on the following organs:
Nasal tissue.

Carcinogenicity
No relevant data found.

Teratogenicity
Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
No relevant data found.

Mutagenicity
In vitro genetic toxicity studies were negative.

Aspiration Hazard
Based on available information, aspiration hazard could not be determined.

Anisole

Acute oral toxicity
LD50, Rat, 3,700 mg/kg

Acute dermal toxicity
The dermal LD50 has not been determined.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.
Prolonged contact may cause skin irritation with local redness.

Serious eye damage/eye irritation
May cause slight temporary eye irritation.
May cause slight temporary corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.

**Sensitization**
For skin sensitization:
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**
May cause drowsiness or dizziness.
Route of Exposure: Inhalation

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**
In animals, effects have been reported on the following organs:
Central nervous system.
Observations in animals include:
Anesthetic or narcotic effects.

**Carcinogenicity**
No relevant data found.

**Teratogenicity**
No relevant data found.

**Reproductive toxicity**
No relevant data found.

**Mutagenicity**
In vitro genetic toxicity studies were negative.

**Aspiration Hazard**
Based on available information, aspiration hazard could not be determined.

**Diazot Photoactive Compound**

**Acute oral toxicity**
Single dose oral LD50 has not been determined.

**Acute dermal toxicity**
The dermal LD50 has not been determined.

**Acute inhalation toxicity**
The LC50 has not been determined.

**Skin corrosion/irritation**
No relevant data found.

**Serious eye damage/eye irritation**
No relevant data found.

**Sensitization**
For skin sensitization:
No relevant data found.
For respiratory sensitization:
No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**
Available data are inadequate to determine single exposure specific target organ toxicity.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**
No relevant data found.

**Carcinogenicity**
No relevant data found.

**Teratogenicity**
No relevant data found.

**Reproductive toxicity**
No relevant data found.

**Mutagenicity**
No relevant data found.

**Aspiration Hazard**
Based on physical properties, not likely to be an aspiration hazard.

**2-Methyl Butyl Acetate**

**Acute oral toxicity**
LD50, Rat, 12,306 mg/kg

**Acute dermal toxicity**
LD50, Rabbit, 8,359 mg/kg

**Acute inhalation toxicity**
No adverse effects are anticipated from single exposure to vapor.

LC50, Rat, 4 Hour, vapour, > 5.2 mg/l No deaths occurred at this concentration.

**Skin corrosion/irritation**
Prolonged contact may cause skin irritation with local redness.

**Serious eye damage/eye irritation**
May cause eye irritation.
May cause corneal injury.

**Sensitization**
Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:
No relevant data found.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**
Repeated excessive exposure may cause irritation of the upper respiratory tract.
Carcinogenicity
No relevant data found.

Reproductive toxicity
No relevant data found.

Mutagenicity
In vitro genetic toxicity studies were negative.

Aspiration Hazard
Based on available information, aspiration hazard could not be determined.

n-amyl acetate

Acute oral toxicity
LD50, Rat, > 6,500 mg/kg

Acute dermal toxicity
LD50, Rabbit, > 8,300 mg/kg

Acute inhalation toxicity
LC50, Rat, vapour, > 24 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Prolonged contact may cause skin irritation with local redness.
May cause drying and flaking of the skin.

Serious eye damage/eye irritation
May cause eye irritation.
May cause slight temporary corneal injury.

Sensitization
Skin contact may cause an allergic skin reaction in a small proportion of individuals.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In animals, effects have been reported on the following organs:
Respiratory tract.

Carcinogenicity
No relevant data found.

Teratogenicity
No relevant data found.

Reproductive toxicity
No relevant data found.

Mutagenicity
In vitro genetic toxicity studies were negative.

**Aspiration Hazard**
Based on physical properties, not likely to be an aspiration hazard.

**Cresol**

**Acute oral toxicity**
Typical for this family of materials. LD50, Rat, 100 - 300 mg/kg

**Acute dermal toxicity**
Typical for this family of materials. LD50, Rabbit, 300 - 1,000 mg/kg

**Acute inhalation toxicity**
Typical for this family of materials. LC50, Rat, 8 Hour, vapour, 35.38 mg/l

**Skin corrosion/irritation**
Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

**Serious eye damage/eye irritation**
May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

**Sensitization**
For skin sensitization:
No relevant data found.

For respiratory sensitization:
No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**
Material is corrosive. Material is not classified as a respiratory irritant; however, upper respiratory tract irritation or corrosivity may be expected.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**
May cause central nervous system effects.
Excessive exposure may cause neurologic signs and symptoms.
Symptoms may include convulsions or seizures.
In animals, effects have been reported on the following organs:
Blood-forming organs (Bone marrow & Spleen).
Bone marrow.
Spleen.
Female reproductive organs.
Gastrointestinal tract.
Kidney.
Liver.

**Teratogenicity**
Did not cause birth defects in laboratory animals. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

**Reproductive toxicity**
In animal studies, did not interfere with reproduction.
Mutagenicity
In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

Aspiration Hazard
Aspiration into the lungs may occur during ingestion or vomiting, resulting in rapid absorption and injury to other body systems.

1,4-Dioxane

Acute oral toxicity
LD50, Rat, > 5,000 mg/kg

Acute dermal toxicity
LD50, Rabbit, > 7,000 mg/kg

Acute inhalation toxicity
Prolonged excessive exposure may cause serious adverse effects, even death. May cause central nervous system effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. May cause pulmonary edema (fluid in the lungs.)

LC50, Rat, 4 Hour, vapour, 51.3 mg/l
Lethal Dose, Humans, 470 ppm Estimated.

Skin corrosion/irritation
Brief contact is essentially nonirritating to skin. May cause drying and flaking of the skin. Prolonged contact may cause skin irritation with local redness.

Serious eye damage/eye irritation
May cause slight eye irritation. May cause slight corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.

Sensitization
For skin sensitization:
No relevant information found.

For respiratory sensitization:
No relevant information found.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause respiratory irritation.
Route of Exposure: Inhalation
Target Organs: Respiratory Tract

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In animals, effects have been reported on the following organs:
Liver.
Kidney.
Nasal tissue.
May cause central nervous system effects.

**Carcinogenicity**
Human epidemiology studies have shown no indication that exposures to 1,4-dioxane in industrial situations have caused an increased incidence of tumors even though it has been shown to cause cancer in some laboratory animals.

**Teratogenicity**
Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

**Reproductive toxicity**
Limited data in laboratory animals suggest that the material does not affect reproduction.

**Mutagenicity**
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Aspiration Hazard**
Based on physical properties, not likely to be an aspiration hazard.

**Carcinogenicity**
Not considered carcinogenic by NTP, IARC, and OSHA

### 12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

**Toxicity**

**Cresol novolak resin**

**Acute toxicity to fish**
No relevant data found.

**Ethyl lactate**

**Acute toxicity to fish**
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Danio rerio (zebra fish), semi-static test, 96 Hour, 320 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**
EC50, Daphnia magna (Water flea), static test, 48 Hour, 683 mg/l, OECD Test Guideline 202 or Equivalent

**Acute toxicity to algae/aquatic plants**
ErC50, Pseudokirchneriella subcapitata (green algae), Static, 96 Hour, Growth rate, 3,500 mg/l, Method Not Specified.

**Anisole**
Acute toxicity to fish
Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, 27 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, 21 mg/l, OECD Test Guideline 201 or Equivalent
ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 47 mg/l, OECD Test Guideline 201 or Equivalent

Diazó Photoactive Compound
Acute toxicity to fish
No relevant data found.

2-Methyl Butyl Acetate
Acute toxicity to fish
Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).
Material is harmful to aquatic organisms (LC50/EC50/IC50 between 10 and 100 mg/L in the most sensitive species).
LC50, Fathead minnow (Pimephales promelas), 96 Hour, 69 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna, 48 Hour, 40.9 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EC50, Pseudokirchneriella subcapita, 96 Hour, >466 mg/l

n-amyl acetate
Acute toxicity to fish
Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), 96 Hour, 69 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates
LC50, Daphnia magna (Water flea), 24 Hour, 210 mg/l
EC50, Daphnia magna (Water flea), 24 Hour, 205 mg/l

Cresol
Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, 7.5 mg/l

Acute toxicity to aquatic invertebrates
LC50, Daphnia magna (Water flea), 48 Hour, 4.9 mg/l

Acute toxicity to algae/aquatic plants
For similar material(s):
EC50, Desmodesmus subspicatus (green algae), 48 Hour, 21 mg/l
For similar material(s): EC10, Desmodesmus subspicatus (green algae), 48 Hour, 21 mg/l

**Toxicity to bacteria**
EC50, activated sludge, 458 mg/l

**Chronic toxicity to fish**
For similar material(s): NOEC, Pimephales promelas (fathead minnow), 32 d, 1.35 mg/l

**Chronic toxicity to aquatic invertebrates**
NOEC, Daphnia magna (Water flea), 21 d, number of offspring, > 1 mg/l

**1,4-Dioxane**

**Acute toxicity to fish**
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 13,000 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**
EC50, Daphnia magna (Water flea), static test, 24 Hour, 8,450 mg/l, OECD Test Guideline 202 or Equivalent

**Persistence and degradability**

**Cresol novolak resin**

**Biodegradability:** No relevant data found.

**Ethyl lactate**

**Biodegradability:** Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

**Biodegradation:** 75 %
**Exposure time:** 28 d
**Method:** OECD Test Guideline 301D

**Anisole**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Not applicable
**Biodegradation:** 56 %
**Exposure time:** 14 d
**Method:** OECD Test Guideline 301C or Equivalent

**Diazophotoactive Compound**

**Biodegradability:** No relevant data found.

**2-Methyl Butyl Acetate**

**Biodegradability:** Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). Material is expected to be readily biodegradable.
**Biodegradability:** Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). Material is expected to be readily biodegradable.

**Cresol**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

**Theoretical Oxygen Demand:** 2.52 mg/mg

**Biological oxygen demand (BOD)**

<table>
<thead>
<tr>
<th>Incubation Time</th>
<th>BOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 d</td>
<td>1.40 mg/mg</td>
</tr>
<tr>
<td>10 d</td>
<td>2.02 mg/mg</td>
</tr>
<tr>
<td>20 d</td>
<td>2.06 mg/mg</td>
</tr>
</tbody>
</table>

**1,4-Dioxane**

**Biodegradability:** Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Not applicable

**Biodegradation:** 29 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301C or Equivalent

**Theoretical Oxygen Demand:** 1.82 mg/mg

**Biological oxygen demand (BOD)**

<table>
<thead>
<tr>
<th>Incubation Time</th>
<th>BOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 d</td>
<td>20 %</td>
</tr>
<tr>
<td>10 d</td>
<td>23 %</td>
</tr>
<tr>
<td>20 d</td>
<td>30 %</td>
</tr>
</tbody>
</table>

**Photodegradation**

**Test Type:** Half-life (indirect photolysis)

**Sensitizer:** OH radicals

**Atmospheric half-life:** 0.382 d

**Method:** Estimated.

**Bioaccumulative potential**

**Cresol novolak resin**

**Bioaccumulation:** No relevant data found.

**Ethyl lactate**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient:** n-octanol/water(log Pow): 0.06 Measured
Anisole
   **Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
   **Partition coefficient:** n-octanol/water (log Pow): 2.62 OECD Test Guideline 117 or Equivalent

**DiazO Photoactive Compound**
   **Bioaccumulation:** No relevant data found.

2-Methyl Butyl Acetate
   **Bioaccumulation:** No relevant data found.

*n-amyl acetate*
   **Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
   **Partition coefficient:** n-octanol/water (log Pow): 2.34 Estimated.
   **Partition coefficient:** n-octanol/water (log Pow): 2.34 Estimated.

**Cresol**
   **Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
   **Partition coefficient:** n-octanol/water (log Pow): 1.95 Calculated.
   **Bioconcentration factor (BCF):** < 100 Fish Measured

1,4-Dioxane
   **Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
   **Partition coefficient:** n-octanol/water (log Pow): -0.27 Measured
   **Bioconcentration factor (BCF):** 0.2 - 0.6 Cyprinus carpio (Carp) 42 d

**Mobility in soil**

**Cresol novolak resin**
   No relevant data found.

**Ethyl lactate**
   No relevant data found.

**Anisole**
   No relevant data found.

**DiazO Photoactive Compound**
   No relevant data found.

2-Methyl Butyl Acetate
   No relevant data found.

*n-amyl acetate*
   Potential for mobility in soil is very high (Koc between 0 and 50).
   **Partition coefficient (Koc):** 38 Estimated.

**Cresol**
   No relevant data found.

**1,4-Dioxane**
   Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 1.23 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: Dispose in accordance with all local, state (provincial), and federal regulations. Incineration is the recommended method of disposal for containers. Under RCRA, it is the responsibility of the product's user to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because the product uses, transformations, mixtures, processes, etc. may render the resulting materials hazardous.

Treatment and disposal methods of used packaging: Empty containers retain product residues. Follow label warnings even after container is emptied. Improper disposal or reuse of this container may be dangerous and illegal. Refer to applicable federal, state and local regulations.

Contaminated packaging: Dispose of as unused product. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied.

14. TRANSPORT INFORMATION

DOT

Not regulated per 49CFR 173.150(f)(2)

Classification for SEA transport (IMO-IMDG):

<table>
<thead>
<tr>
<th>Proper shipping name</th>
<th>RESIN SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN number</td>
<td>UN 1866</td>
</tr>
<tr>
<td>Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
<tr>
<td>Marine pollutant</td>
<td>No</td>
</tr>
<tr>
<td>Transport in bulk</td>
<td>Consult IMO regulations before transporting ocean bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code</td>
</tr>
</tbody>
</table>

Classification for AIR transport (IATA/ICAO):

<table>
<thead>
<tr>
<th>Proper shipping name</th>
<th>Resin solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN number</td>
<td>UN 1866</td>
</tr>
<tr>
<td>Class</td>
<td>3</td>
</tr>
<tr>
<td>Packing group</td>
<td>III</td>
</tr>
</tbody>
</table>

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.
15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
- Immediate (acute) Health Hazard
- Delayed (chronic) Health Hazard
- Fire Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103
Calculated RQ exceeds reasonably attainable upper limit.

<table>
<thead>
<tr>
<th>Components</th>
<th>CASRN</th>
<th>RQ (RCRA Code)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cresol</td>
<td>1319-77-3</td>
<td>100 lbs RQ</td>
</tr>
<tr>
<td>Cresol</td>
<td>1319-77-3</td>
<td>100 lbs RQ (D026)</td>
</tr>
<tr>
<td>Cresol</td>
<td>1319-77-3</td>
<td>100 lbs RQ (F004)</td>
</tr>
</tbody>
</table>

California (Proposition 65)
This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.

United States TSCA Inventory (TSCA)
All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Hazard Rating System
NFPA

<table>
<thead>
<tr>
<th>Health</th>
<th>Fire</th>
<th>Reactivity</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>0</td>
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</tbody>
</table>

Revision
Identification Number: 101100140 / 1304 / Issue Date: 07/14/2017 / Version: 5.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

<table>
<thead>
<tr>
<th>ACGIH</th>
<th>USA. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAL PEL</td>
<td>California permissible exposure limits for chemical contaminants (Title 8, Article 107)</td>
</tr>
</tbody>
</table>
Product name: MEGAPOSIT™ SPR™ 220-7.0 POSITIVE PHOTORESIST

<table>
<thead>
<tr>
<th>Dow IHG</th>
<th>Dow Industrial Hygiene Guideline</th>
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</thead>
<tbody>
<tr>
<td>OSHA Z-1</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
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<tr>
<td>PEL</td>
<td>Permissible exposure limit</td>
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<tr>
<td>SKIN</td>
<td>Absorbed via skin</td>
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<tr>
<td>STEL</td>
<td>Short Term Exposure Limit (STEL):</td>
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<tr>
<td>TWA</td>
<td>Time Weighted Average (TWA):</td>
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</tbody>
</table>

### Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

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